

APPLICANTS: Choi et al.
SERIAL NO.: 09/954,515
FILED: September 17, 2001
FOR: PROCESS FOR FORMING ELECTRODES

Page 5 of 7

REMARKS

Claims 18-28 are pending in this application. Claims 18-27 have been rejected under 35 USC 103(a) as being unpatentable over Fukuyoshi et al. (U.S. Serial No. 5,667,853). Claim 28 has been rejected under 35 USC 103(a) as being unpatentable over Fukuyoshi et al. in view of Yatabe et al. (U.S. Serial No. 4,234,654). Claim 18 is amended herein.

Amended independent claim 18 recites a substantially transparent electrode assembly comprising a substrate, a high index layer formed on the substrate, a conductive layer formed on the high index layer and a high index top layer having a conductivity ranging from about 100 ohms/square to about 400 ohms/square and a thickness ranging from about 20 nm to about 100 nm formed on the conductive layer, at least the top layer and the conductive layer being patterned so as to divide the conductive layer into a plurality of discrete electrodes.

Independent claim 18 is patentable over Fukuyoshi et al., the CERAC technical publication and Yatabe et al. because none of these references, either alone or in combination, shows or suggests a substantially transparent electrode assembly including a high index top layer having a conductivity ranging from about 100 ohms/square to about 400 ohms/square with a thickness ranging from about 20 nm to about 100 nm.

Fukuyoshi et al. disclose a multilayered conductive film including a silver-based layer formed of a silver-based metallic material, and first and second transparent oxide layers being independently formed of a compound oxide material of indium oxide. As the Examiner admits, Fukuyoshi et al. fail to teach that the transparent oxide top layer has a conductivity ranging from about 100 ohms/square to about 400 ohms/square. Instead, the Examiner states that the CERAC technical publication "teaches that high conductivity is balanced against high transmission in the visible light region, and that indium tin oxide must have a conductivity...or sheet resistance of

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Page 6 of 7

greater than 100 ohms/square in order to obtain visible region transmission near 90%.” The Examiner states that it would have been the result of routine experimentation for one of ordinary skill in the art to use indium tin oxide with a conductivity ranging from about 100 ohms/square to about 400 ohms/square as the transparent oxide top layer of Fukuyoshi et al. However, the present specification states that the preferred materials and processes for forming the top layer are the same as those for forming the insulating layer, except that the condition used to deposit the top layer should be varied so as to give the top layer substantial conductivity. See specification page 8, lines 1-4. In addition, the CERAC technical publication discloses that the “optical and electronic properties of ITO films are highly dependent on the deposition parameters and the starting composition of evaporation material used.” Therefore, there is no suggestion or motivation within Fukuyoshi et al. or the CERAC publication to vary the condition used to deposit the high index top layer and the high index layer in the way suggested by the Examiner to make the present claimed invention. Furthermore, the CERAC publication does not show or suggest using an indium tin oxide layer having a thickness ranging from about 20 to about 100 nm. In fact, the CERAC publication only discloses using a film with a thickness range of 100 to 200 nm for high IR reflectivity. Therefore, there is no suggestion or motivation to combine the CERAC publication with Fukuyoshi et al. to make the claimed invention.

Yatabe et al. disclose a heat wave reflective or electrically conductive laminated structure composed of a shaped solid substrate, a transparent thin layer having a high refractive index in contact with the substrate, a transparent heat wave reflective layer of an electrically conductive metal in contact with the transparent thin layer, and optionally, a transparent thin layer having a high refractive index in contact with the transparent heat wave reflective layer and a transparent top layer in contact with the transparent thin layer. As mentioned previously, Yatabe et al. do not

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Page 7 of 7

show or suggest a high index top layer having substantial conductivity. In fact, the Examiner has previously admitted that Yatabe et al. teach a high index layer that is electrically insulating. Therefore, there is no suggestion or motivation to combine Yatabe et al. with Fukuyoshi et al. in the way suggested by the Examiner to make the claimed invention.

Dependent claims 19-28 depend directly from independent claim 18 and thus contain all of the limitations of the independent claim from which they depend. Therefore, these dependent claims are patentable over Fukuyoshi et al., the CERAC publication and Yatabe et al., alone or in combination, for at least the same reasons set forth above with respect to claim 18.

Enclosed is a Petition for a Two Month Extension of Time with the required fee.

Applicants submit that all of the claims are now in condition for allowance, which action is requested. Please apply any charges or credits to Deposit Account No. 50-1721.

Respectfully submitted,



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